





Project Developer's Perspective

“From the Trenches”

Presenters

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- Four Key Factors
 - Improved mine safety
 - Improves mine productivity
 - Generated additional revenue
 - Coal
 - Gas
 - Significantly reduces methane emissions into the environment



- Historically, gas has been the enemy of the coal miner (and still is).

Consol Buchanan #1 Mine (Southwestern Va)

- Longwall Mine
 - 2,000' Deep
 - Incredibly “Gassy” Mine
 - Target mining seam roughly 6' Thick
 - Many other seams above target coal
 - 400 to 600 scf / ton methane content
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- In order to reduce methane concentrations within the mine and above ground infrastructure was created as a supplement to the standard mine fan ventilation
 - Early 1980's began drilling vertical ventilation wells
 - Soon after began drilling pre-mining degasification wells

– Today CNX Gas Company is:

- #1 in methane capture in the United States energy industry
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- The #2 Gas producer in the Appalachian Basin
- The lowest cost producer in the eastern US, highest margin producer in the US
- The safest operator in the E&P Industry
May 21, 2008 CNX GAS employees have worked 3 million man-hours without a lost time accident. Last lost time accident was June of 1994
- WWW.CNXGAS.COM



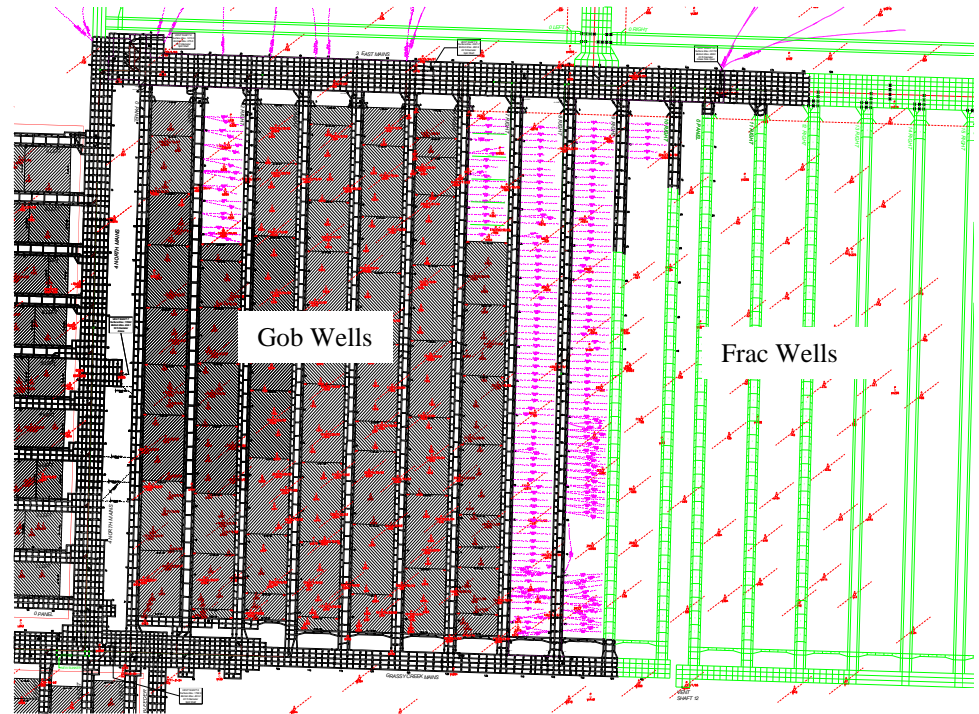
- Underground Mine Methane Extraction

- Communication

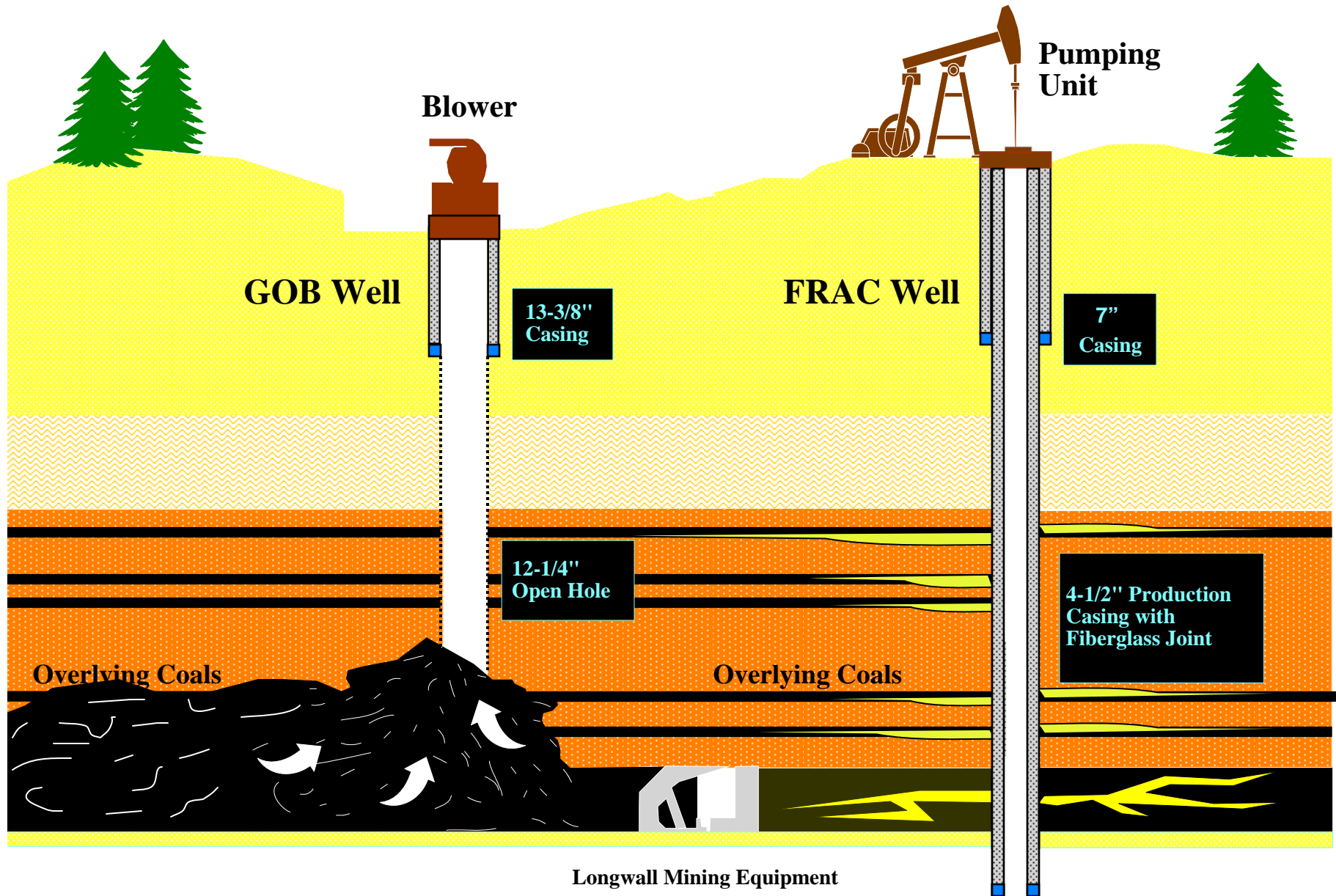
- Mapping
 - Meeting
 - Planning
 - Education
- Electronic

- Surface Monitoring
 - Underground Monitoring

- Mine Safety is #1 ALWAYS!



Vertical Degasification Techniques



- Project Economics
 - Items to consider
 - Coal Control (Footprint)
 - Lease / Fee / Royalty
 - Market
 - Cost Structure
 - Sales Pipelines
 - Capacity
 - Seasonal Constraints
 - Quality Criteria
 - Pressures
 - Produced Fluid Disposal

- Exploration

- Core

- Thickness and depths
 - Gas content
 - Permeability (path which gas and water is released)
 - Adsorption Isotherms (storage capability)
 - Cleat information

- In addition (in some cases)
 - Gas quality
 - Water quality



- Data Evaluation
 - After careful consideration.....

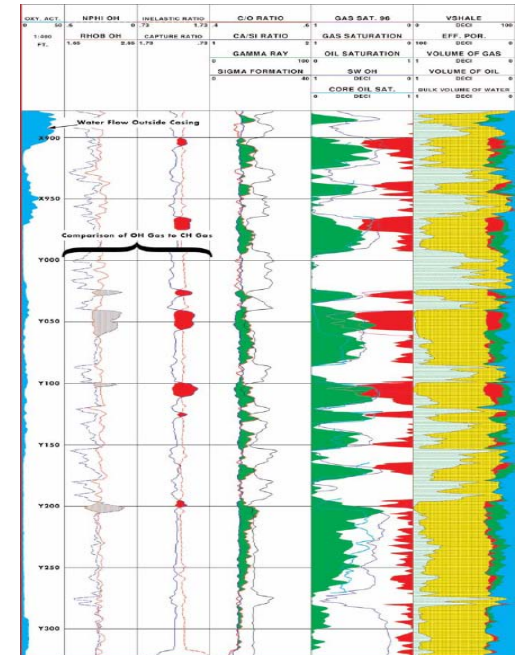


- Post Drilling

- Electronic Logging Information

- Gas and Production Fluid Information

- Quality
 - Quantity
 - On production time
 - Dewatering time



- Drilling Development Plan

- Based on core data

- Well Design

- Horizontal
 - Vertical

- Stimulation technique

- Drill Depth

- Well spacing

- Experiment (Carefully)



- Gas Treatment
 - Basic Inert Gases
 - CO₂
 - O₂
 - N₂
 - Treatment Processes
 - Molecular Gate
 - Pressure Swing Adsorption
 - Amine
 - Cryogenic
 - Oxygen Catalysts
 - Dehydration



- Gathering Designs

- Based on drilling plan and results

- Production
 - Target production pressures
 - Spacing
 - Water infrastructure

- Market

- 24 / 7 / 365
 - Firm Transportation

- Compression

- Gas Fired vs Electric
 - Lease vs Purchase
 - Maintenance



- Produced Fluids
 - Disposal Option
 - Underground injection
 - Agriculture
 - National Pollutant Discharge Elimination System (NPDES)
 - Municipalities Waste Treatment
 - Gathering Design
 - Pipeline system design
 - Water
 - Gas
 - Compression
 - Treatment



- Develop Your Team

- Contractors

- Experience
 - Support the local companies
 - SAFETY – Create the new culture day one
 - Market

- Company

- Safety Reinforcement
 - Personnel are core to the success of your project
 - Education and experience both very important

- Competition



- Public Relations
 - Introduce Yourself
 - Residences, Townships, County and State Officials
 - Educate
 - Disclose Your Intentions (as much as possible)
 - Corporate Citizenship
 - Be Available
 - Get to know your local agencies
 - Be aware to local ordinances



- Land
 - Staff
 - Courthouse
 - Land agents
 - Title mapping
 - Determine Payment
 - Stay consistent
 - Keep your word
 - Be Careful!!
 - Document everything
 - Have agreements recorded

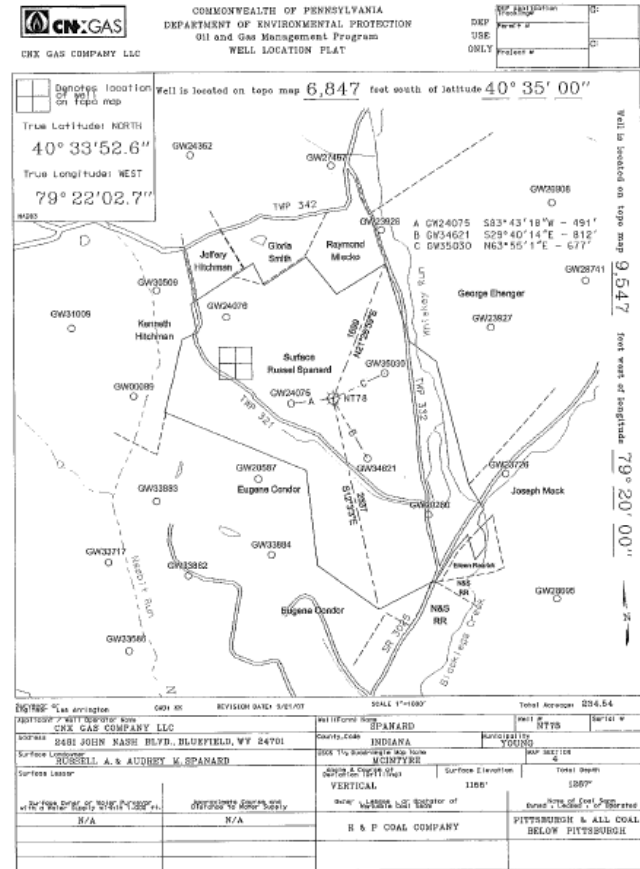


- Staff
- Drilling
- Pipeline

- Stream Crossing
- PNDI
- Road Crossing

– Water Disposal

- Heavy Hauling and Bonding



- Environmental Stewardship
 - Minimize Impact
 - Keep site sizes to minimum
 - Reclaim as soon as possible
 - Restore vegetation
 - Utilize proper E & S controls
 - Restore and Correct
 - Correct previous environmental issues
 - Give Back
 - Get involved in areas of you development



- Protect Your Assets and Reduce Your Risk
 - Security
 - Warehouse
 - Stations and Electrical Substations
 - Theft
 - Any item that has a market is a target
 - Signage (Protect others and yourself)
 - Vandalism
 - Sabotage



- Carbon Credits

- Methane captured ahead of mining is eligible for carbon emission credits on the Chicago Climate Exchange.
- CNX Gas has registered for 8.4 million tons of credits, which were generated from 2003 - 2007
- Ongoing annual credits could be in the 2 – 3 million ton range.
- In recent trading on the Chicago Climax Exchange, these credits were worth \$5.40 per ton.



- With America's need for indigenous energy sources, coalbed methane offers alternative energy that is, just in recent years been utilized.
 - In 2007 an estimated 1,145 million tons of coal was mined in the United States alone.
- How much methane was released into our environment?
- How much of America's coal reserves have economic CBM reserves that will be never be tapped?



Questions?